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Celebrating the August Born Scientists

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These luminaries, born in the month of August, have each illuminated the path of human progress in their own right. Their discoveries have transcended the bounds of their respective fields, shaping the world as we know it. As we reflect on their lives and legacies, we are reminded of the boundless potential of the human spirit to inquire, innovate, and inspire. Through their work, these scientists have left an enduring legacy, a testament to the power of curiosity and the relentless pursuit of knowledge.

Ernest Rutherford, a brilliant student originally from New Zealand, was born on August 30, 1871. After completing his school education, he studied physics under Sir J. J. Thomson at the Cavendish Laboratory in England. Then he moved to Canada and began teaching and research at McGill University. At the very end of the 19th century and the beginning of the 20th century, his research began on radioactivity, the transformation of elements and the formation of new elements through it, which was a frontline topic at that time. Ernest Rutherford, who was later made a Lord, was awarded the Nobel Prize in 1908 for his work on radioactivity. It may sound a little surprising, that he was awarded the Nobel Prize in chemistry, not physics. He later returned to England and began teaching, and in 1911 at the Cavendish Laboratory, he conducted his most famous experiment to study the scattering of alpha particles incident on a thin gold plate. Through this, it was first discovered that the positive charge is located in a very small region within the atom, and a new model of the atom was developed based on this. The journey of experimental physics research that subsequently began at the Cavendish Laboratory in Cambridge under his leadership served as a role model for the entire world.

The chemical company founded by German chemist **Carl Bosch** was known as IG Faben, and at the beginning of the last century, it was the largest chemical company in the world. So famous is he for his commercial success that many may not remember that from the end of the last century until about the middle of this century, he was Germany's foremost chemist. With German scientist Fritz Haber, he invented the Haber-Bosch process, which made it possible to produce ammonia on a large scale, which on the one hand opened the way for Germany to produce explosives; on the other hand, it became an attractive way to produce chemical fertilizers. At the same time, Carl Bosch contributed to the development of a very important method for the industrial production of urea, which is essential for agriculture. The joint research of Bosch and another German chemist, Wilhelm Meissner, led to the Bosch-Meissner method for the industrial production of urea. Carl Bosch was very successful in the work that many scientists have in combining science and technology through basic research and the application of the results obtained there to practical fields. In recognition of his contributions to chemistry, especially to the chemical industry, he received the Nobel Prize in Chemistry in 1940. Although Albert Einstein recommended several scientists for the Nobel Prize in Physics, he only recommended this one scientist for the Nobel Prize in Chemistry. This German chemist was born on August 27, 1874.

Alexander Fleming is associated with such a chapter in human civilization that identifying him merely as a Nobel laureate in physiology or medicine almost does not reveal his true identity. This Scottish physician and microbiology researcher discovered the first antibiotic, which in today's terminology is a broad-range antibiotic. Doctors now have many types of antibiotics at their disposal that they use to treat various types of infections in different parts of the body, but the father of antibiotics is Alexander Fleming. Fleming joined the army as a doctor in World War I and spent about four years treating wounded soldiers in battlefield hospitals. Here he noticed that the special medicines applied to the wounds of wounded soldiers were often not effective in healing their wounds; rather, the medicines, which were called antiseptics at the time, were in many cases making the condition of the wounded soldiers worse. He began to investigate the cause. After the war, he continued his research on the subject while working in a London hospital, and in 1928, he discovered the first antibiotic against infections. His work opened up new horizons in medical science and gave doctors a remarkable tool. Fleming was born in Scotland on August 4, 1881, and became a Nobel Prize winner in 1945.

The great changes and new directions that were initiated in the 1960s to overcome India's overall food production crisis made it possible to provide food to the country's large population. Behind it was a special initiative to move from the country's traditional agricultural system to a modern one, an initiative that was not entirely free from controversy. But that initiative certainly brought the country back from the brink of potential danger, at least for that time. And the man who led a group of agricultural scientists to make this work a success is Mankombu Samvasivam Swaminathan, who we probably know better as **M. S. Swaminathan**. He was born on August 7, 1925, in Kumbakonam, Tamil Nadu. His research on increasing the production of potatoes, wheat, and rice was particularly important. His goal was to increase agricultural productivity without harming the ecosystem. One of his collaborators was the American agricultural scientist Norman Borlaug, who won the Nobel Peace Prize. He gave special credit for his Nobel Prize to Swaminathan. While working with Borlaug, Swaminathan began searching for and succeeded in finding a variety of cucumbers that had good quality, high yields, and disease-free plants. One of the pioneers of the Green Revolution, Dr. Swaminathan has been awarded many awards and titles. In 2023, the Government of India awarded him the Bharat Ratna posthumously. His centenary is being celebrated this year.

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